REMARKS

Claims 1-21 and 23-30 remain pending in the instant application. Claims 1-21 and 23-30 presently stand rejected. Claims 1, 2, 5, 6, 8, 11, 14, 17, 18, 21, and 23-27 are amended herein. Entry of this amendment and reconsideration of the pending claims are respectfully requested.

Information Disclosure Statement

The Examiner returned an initialed copy of an Information Disclosure Statement ("IDS") mailed to the Examiner on February 12, 2002. A copy of the initialed IDS is included in this response for the Examiner's convenience. However, two Foreign Patent Documents were not initialed and four Non-Patent Literature Documents were not initialed for lack of a cited publication date. The Examiner is respectfully requested to initialize the two Foreign Patent Documents EP0924628 and WO 98/44424. The publication dates of the following Non-Patent Literature Documents are:

Non-Patent Literature Documents	Publication Date
Rosenberg, K.P., et al., "Logarithmically Variable Infrared Etalon Filters," SPIE, Vol. 2262, pgs. 223-232	Sept., 1994
Scobey M. and Stupik P., "Stable Ultra-Narrow Bandpass Filters," SPIE,Vol. 2262, pgs. 37-46	Sept., 1994

Accordingly, the Examiner is respectfully requested to initial the above two arts previously submitted in the IDS mailed on February 12, 2002.

Drawings

In the Office Action mailed February 13, 2003, the Examiner did not indicate whether the drawings are accepted. Accordingly, Applicants request the Examiner provide an indication to that effect.

Claim Rejections – 35 U.S.C. § 112

Claims 1-21 and 23-27 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particular point out and distinctly claim the subject matter which applicant regards as the invention.

The Examiner rejected claim 1 stating, "[t]he claim fails to recite the step to measure voltage across gain region. How does the device monitor the voltage across gain region?" *Office Action* mailed February 13, 2003, page 3, lines 5-7. Accordingly, claim 1 now recites, "***sensing*** voltage across said gain region, and determining cavity losses according to said ***sensed voltage*** across said gain region." Thus, the issue of how the device monitors voltage without first measuring the voltage has been address by substituting the word "sensing."

The Examiner rejected claim 5 as indefinite because "it is unclear how monitoring voltage determines optical losses associated with the cavity. The claim does not recite any step to determining optical losses." *Office Action* mailed February 13, 2003, page 3, lines 9-11. Claim 5 now recites "sensing voltage across a gain medium...." Applicants submit that claim 5 is supported by the specification and direct the examiner's attention to FIG. 4A of the application illustrating a voltage sensor 32 coupled to sense the voltage across gain medium 30. Paragraphs 66 and 67 with reference to FIG. 6, illustrate one embodiment of how sensing voltage across a gain medium enables determining optical losses associated with the laser cavity, represented in FIG. 4A as having a length *l*. The Examiner is further encouraged to review paragraphs 52, 57, and 62 of the specification as examples of further support for claim 5.

The Examiner rejected claim 21, indicating that the phrase "lost element" renders the claim indefinite. *Office Action* mailed February 13, 2003, page 3, lines 12-13. However, former claim 21 in fact recited, "loss element" not "lost element." However, Applicants have amended claim 21 to recite "an optical loss element" to more particularly point out and distinctly claim the subject matter, which Applicants' regard as the invention.

Consequently, all of the Examiner's § 112 concerns have been addressed. Accordingly, Applicants respectfully request that the instant § 112 rejections of claims 1, 5, and 21 be withdrawn.

Claim Rejections – 35 U.S.C. § 102

Claims 1-21 and 23-30 stand rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,366,592 B1 to Flanders ("Flanders"). Applicants respectfully traverse the rejections.

A claim is anticipated only if ***each and every element*** of the claim is found in a single reference. M.P.E.P § 2131 (citing *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628 (Fed. Cir. 1987)). "The identical invention must be shown in as complete detail as is contained in the claim." M.P.E.P. § 2131 (citing *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226 (Fed. Cir. 1989)).

Independent claim 21 recites in pertinent part, "a voltage sensor operatively coupled to said gain medium to monitor voltage across said gain medium...." The Examiner cites wavelength locker 118 (see FIG. 10 of Flanders) and semiconductor optical amplifier ("SOA") chip 422 (see FIG. 10 of Flanders) as disclosing a voltage sensor to monitor voltage across a gain medium. *Office Action* mailed February 13, 2003, page 4. Applicants respectfully disagree.

In fact, referring to FIG. 10, Flanders discloses a beam splitter 310 that splits an output beam from tunable laser system 116 (including SOA chip 422) to direct input beam 312 to wavelength locker 118. Flanders, col. 4, lines 28-32. The magnitude of the input beam 312 is converted into an analog signal by wavelength locker 118, which is in turn converted to a digital signal by A/D 352. *See*, e.g., Flanders, col. 5, lines 19-26. The digital information from wavelength locker 118 is fed into wavelength control system 354. Wavelength control system 354 uses this digital information to control tunable filter 410 and cavity length modulator 412. See, e.g., Flanders, col. 9, lines 12-20. Thus, Flanders fails to disclose a voltage sensor to monitoring voltage across a gain region. Rather, wavelength locker 118 monitors the magnitude of input beam 312, but does not monitor a voltage across SOA chip 422.

Consequently, Flanders fails to anticipate each and every element of independent claim 21, as required by M.P.E.P. § 2131. Accordingly, Applicants request that the instant § 102(e) rejection of claim 21 be withdrawn.

Independent claim 1 recites in pertinent part, "sensing voltage ***across said gain region***...." As discussed above, Flanders fails to disclose sensing a voltage across a gain

region. Accordingly, Applicants request that the instant § 102(e) rejection of claim 1 be withdrawn.

Independent claim 5 recites in pertinent part, "sensing voltage across a gain medium emitting said beam...." For the reasons discussed above in connection with claim 21, Applicants request that the instant § 102(e) rejection of claim 5 be withdrawn.

Independent claim 28 recites in pertinent part, "means for monitoring voltage across said gain medium means...." For the reasons discussed above in connection with claim 21, Applicants request that the instant § 102(e) rejection of claim 28 be withdrawn.

Dependent claims 2-4, 6-20, 23-27, 29, and 30 are novel over the prior art of record for at least the same reasons as discussed above in connection with their respective independent claims, in addition to adding further limitations of their own. Accordingly, Applicants respectfully request that the instant § 102(e) rejections for claims 2-4, 6-20, 23-27, 29, and 30 be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants believe the applicable rejections have been overcome and all claims remaining in the application are presently in condition for allowance. Accordingly, favorable consideration and a Notice of Allowance are earnestly solicited. The Examiner is invited to telephone the undersigned representative if the Examiner believes that an interview might be useful for any reason.

CHARGE DEPOSIT ACCOUNT

It is not believed that extensions of time are required beyond those that may otherwise be provided for in documents accompanying this paper. However, if additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. § 1.136(a). Any fees required therefore are hereby authorized to be charged to Deposit Account No. 02-2666. Please credit any overpayment to the same deposit account.

Respectfully submitted,

BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

Date: May 9, 2003

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Luci M. Arevalo

05-09-03
Date

VERSION WITH MARKINGS TO SHOW CHANGES MADE

In the Claims:

1. (Amended) A method for operating a laser with a semiconductor gain region, comprising [monitoring]sensing voltage across said gain region, and determining cavity losses according to said [monitored]sensed voltage across said gain region.

2. (Amended) The method of claim 1, further comprising adjusting a loss characteristic associated with said laser according to said [monitored]sensed voltage across said gain medium.

5. (Amended) A method for controlling performance of a laser cavity having a beam traveling therethrough, comprising:

(a) [monitoring]sensing voltage across a gain medium emitting said beam; and

(b) determining optical losses associated with said cavity according to said [monitored]sensed voltage across said gain medium.

6. (Amended) The method of claim 5, further comprising adjusting a loss characteristic of said cavity according to said [monitored]sensed voltage across said gain medium.

8. (Amended) The method of claim 7, wherein said adjusting said loss element comprises:

(a) introducing a frequency modulation to said loss element; and

(b) deriving an error signal from said [monitored]sensed voltage across said gain medium, said error signal indicative of propagation characteristics of said frequency modulation.

11. (Amended) The method of claim 7, wherein said adjusting said loss element comprises:

(a) introducing a frequency modulation to a plurality of positional degrees of freedom of said loss element;

(b) deriving an error signal from said [monitored]sensed voltage across said gain medium, said error signal indicative of propagation characteristics of said frequency modulation to each of said plurality of positional degrees of freedom of said loss element; and

(c) adjusting each of said plurality of positional degrees of freedom of said loss element.

14. (Amended) The method of claim 5, further comprising adjusting a plurality of loss elements associated with said cavity according to said [monitored]sensed voltage across said gain medium.

17. (Amended) The method of claim 15, wherein said adjusting said loss elements comprises:

(a) sequentially introducing a frequency modulation to each said loss element; and

(b) deriving error signals from said [monitored said]sensed voltage, said error signals indicative of propagation characteristics of each said frequency modulation.

18. (Amended) The method of claim 15, wherein said adjusting said loss elements comprises:

(a) simultaneously introducing a different frequency modulation to each said loss element; and

(b) deriving error signals from said [monitored said]sensed voltage, said error signals indicative of propagation characteristics of each said frequency modulation.

21. (Twice Amended) A laser apparatus, comprising:

(a) a gain medium to emit a coherent beam along an optical path;

min of 2 reflectors

(b) a reflector positioned in said optical path and defining a laser cavity; → No

(c) a voltage sensor operatively coupled to said gain medium to monitor voltage across said gain medium; and

(d) a control system operatively coupled to said voltage sensor and to an optical loss element positioned in said optical path in said cavity, said control system to adjust said optical loss element according to said monitored voltage across said gain medium to reduce optical losses associated with said cavity.

23. (Amended) The apparatus of claim 21, further comprising a dither element operatively coupled to said optical loss element and configured to introduce a frequency dither to said optical loss element, said frequency dither detectable in said monitored voltage across said gain medium.

24. (Amended) The apparatus of claim 21, wherein said optical loss element comprises said reflector.

25. (Amended) The apparatus of claim 21, further comprising a plurality of dither elements, each said dither element operatively coupled to a corresponding positional degree of freedom of said optical loss element, each said dither element producing a frequency dither detectable in said monitored voltage across said gain medium.

26. (Amended) The apparatus of claim 21, further comprising:

(a) a plurality of optical loss elements positioned in said optical path in said cavity; and

(b) a control system operatively coupled to said voltage detector and each said optical loss element, said control system configured to adjust each said optical loss element according to said monitored voltage across said gain medium.

27. (Amended) The apparatus of claim 26, further comprising a plurality of dither elements, each said dither element operatively coupled to a corresponding one of said optical loss elements and configured to introduce a frequency dither to each said optical loss element, said frequency dither in each said optical loss element detectable in said monitored voltage across said gain medium.